Subjective quality of life in At-Risk Mental State for psychosis patients: relationship with symptom severity and functional impairment

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Abstract:

Aims
The understanding of factors related to poor subjective quality of life (sQoL) in early psychosis patients is important for both research and treatment efforts. This study examined how sQoL is associated with age at onset of prodromal symptoms, duration of untreated illness (DUI), symptom severity, premorbid functioning and current functional impairment in At-Risk Mental State (ARMS) for psychosis patients.

Methods
Forty ARMS patients were assessed for sQoL, symptom severity, premorbid functioning, and social and role functioning.

Results
As expected, a large number of significant and negative correlations between sQoL domains and several symptom dimensions emerged, especially for negative symptoms, behavioural change and depression. Poor premorbid functioning in late adolescence was associated with impairments in the psychological health and social relationship domains of sQoL. Current functional impairment was associated with all sQoL domains. Neither age at onset of prodromal symptoms nor DUI was related with sQoL.

Conclusions
Findings indicate that different domains of sQoL are differentially and meaningfully associated with symptom severity and functional impairment, suggesting that greater symptom severity and poor functioning are already related with decreased sQoL in the ARMS for psychosis stage. Furthermore, findings highlight the importance of examining functional impairment and affective-motivational symptoms in future research on sQoL in ARMS populations due to their strong relationship with poor sQoL. Finally, findings underscore the importance of addressing the social and occupational dysfunctions already present in early psychosis with psychosocial interventions.

Keywords: early psychosis | functioning | premorbid adjustment | schizophrenia | subjective quality of life

Article:

Introduction

Quality of life (QoL) is a multidimensional construct defined as individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.[1] According to this definition, QoL consists of four domains: physical health, psychological state, social relationships, and relationship to salient features of the environment.[1] QoL has emerged as a unifying concept in the assessment of the impact of sickness on people's day-to-day lives[2] and has gained increasing importance as a global measure of the social and clinical outcome in schizophrenia spectrum disorders.[3] Moreover, consideration of QoL from the subjective perspective of patients, that is, subjective quality of life (sQoL), has been increasingly used as an outcome measure to evaluate the impact of illness on the everyday life of patients or as a therapy outcome measure in clinical practice.[4]

sQoL is a heterogeneous and complex construct likely influenced by multiple factors.[5] Some studies have shown associations of sQoL with gender,[6-8] occupation,[9] ethnicity,[7] age and living situation.[10] Most studies addressing sQoL in schizophrenia patients and other severe mental illnesses have focused on its association with psychiatric symptoms. Some of them have found associations of sQoL with positive and negative symptoms (e.g. Packer et al.;[11] Cotton et al.;[12] Norman et al.[13]), such that greater symptom severity is associated with decreased sQoL. Nevertheless, numerous studies have demonstrated that general psychopathology consistently emerges as the strongest contributor to poor sQoL in schizophrenia.[14] Furthermore, it has been suggested that anxiety and depression have a substantial and independent influence on sQoL (e.g. Huppert and Smith;[15] Dickerson et al.[16]).

There is evidence that sQoL changes across stages of the disorder, being lower in first-episode psychosis (FEP) than in chronic schizophrenia, which could be explained by the processes of adaptation to the illness across time.[17] In FEP patients, poor sQoL has been generally related to negative and depressive symptoms, longer duration of untreated psychosis (DUP), poor premorbid adjustment and certain illness beliefs (e.g. Browne et al.;[3] Priebe et al.;[17] Malla et al.;[18] Theodore et al.;[19] Gomez-de-Regil et al.;[20]). In order to better understand the factors related to the worsening of sQoL in early psychosis, it is important to examine which features are already associated with poor sQoL in individuals presenting clinical high risk. Three studies have shown that sQoL is markedly lower in prodromal or At-Risk Mental State (ARMS) patients compared to healthy controls,[8] other help seekers[21] and FEP patients.[22] These findings lend support to the notion that this population is already in need for mental health care, especially considering their risk for transition to psychosis. Thus, it is important to further investigate the determinants of reduced sQoL in ARMS to increase the level of satisfaction with life in these at-risk populations.

Regarding the association between sQoL and psychopathology in ARMS patients, it has been shown that sQoL is related with the severity of positive symptoms and unspecific symptoms (especially with depressive symptoms, which have been found to be the most important predictor of sQoL in the initial prodromal states).[8, 22] In addition to psychiatric symptoms, functional impairment represents a key feature of psychosis and could be an important determinant of sQoL, since it occurs early in the course of the disorder and has a big impact in daily living. Some studies in schizophrenia and FEP patients have shown that general sQoL has a significant relationship to functioning,[12, 23, 24] but it is not well known whether early functional decline is related to sQoL in ARMS patients.

Investigating clinical and psychosocial factors related with sQoL prior to the onset of frank psychotic symptoms should allow us to better understand the formation of hopelessness and psychosocial functional impairment, which should inform the design of better treatments for at-risk patients. Thus, the present study examined how sQoL in ARMS patients is related with age at onset of prodromal symptoms, duration of untreated illness (DUI), symptom severity, premorbid functioning and current functional impairment. It was hypothesized that positive, negative and depressive symptoms, as well as general psychopathology and functional impairment, would be related with decreased sQoL in ARMS. Furthermore, given that (i) patients with psychotic disorders often do not receive treatment until months or years after the onset of prodromal symptoms, and (ii) that delay in treatment may result in more disruption in social and occupational performance with implications for sQoL, we expected that both age at onset of prodromal symptoms and DUI would be associated with poor overall sQoL.

Methods

Participants

Patients' inclusion criteria were: a) age between 14 and 40 years old; b) IQ $\geq$75; c) a proper command of Spanish language; and d) meeting criteria for at least one of the following ARMS groups criteria based on the Comprehensive Assessment of At-Risk Mental States[25] (CAARMS): (i) vulnerability traits; (ii) attenuated psychotic symptoms (APS) group; or (iii) brief limited intermittent psychotic symptoms (BLIPS). Patients were excluded if they met criteria for ‘psychosis threshold/antipsychotic treatment threshold’ as determined by the CAARMS (i.e. severity and frequency score threshold met for longer than 1 week), or if there was presence of organically based psychosis or any previous antipsychotic treatment.

Measures

The CAARMS[25] was administered to assess ARMS criteria and the severity of prodromal symptoms (only severity of CAARMS symptom subscales was used for the purpose of this study). Depressive symptoms were assessed with the Calgary Depression Scale.[26] Premorbid functioning was assessed with the Premorbid Adjustment Scale,[27] which was completed with the information provided by both patients and their relatives. Social impairment was assessed with the social and role global functioning scales,[28] which were developed to address functioning specifically in the prodromal phases of psychosis and to disentangle the social and role performance domains.

The brief version of the World Health Organization Quality of Life (WHOQoL-BREF),[29] a cross-cultural and widely used measure for assessing specific aspects of daily life in schizophrenia research, was administered to assess sQoL. The WHOQoL-BREF is a 26-item self-report measure comprised of four domains: physical health (activities of daily living, dependence on medical treatment, energy and fatigue, mobility, pain and discomfort, sleep, work capacity), psychological health (bodily image and appearance, negative feelings, positive feelings, self-esteem, spirituality, concentration), social relationships (personal relationships, social support, sexual activity) and environment (finances, physical safety, access to health services, home environment, opportunities to acquire new information, leisure activities, physical environment, transport). In addition, an overall sQoL score is calculated using the initial two questions of the measure regarding self-perception of overall sQoL and general health. Domain scores are scaled in a positive direction (i.e. higher scores denote higher QoL).

Following Keshavan et al.,[30] we established the onset of the prodrome based upon the first appearance of either attenuated positive symptoms or attenuated negative symptoms (as defined in the CAARMS in this study). DUI was defined as the time interval in weeks since the onset of prodromal symptoms to receiving the first specialized psychiatric and/or psychological treatment.[31] All available information provided by patients, family and clinical history was used to set both DUI and the age at onset of prodromal symptoms.

Procedure

The present study is part of a larger longitudinal study currently being carried out in the Sant Pere Claver Early Psychosis Program in Barcelona, Spain.[32] The protocol for the research project has been approved by the Ethics Committee of the World Medical Association (Declaration of Helsinki). Written informed consent was obtained from all participants. If the patient was less than 18 years old, consent was given by parents or a legal guardian and assent was provided by the participant. All the assessments were conducted by experienced clinical psychologists.

Results

A total of 40 ARMS patients were included in the current study. Most of them met criteria for the APS group (90%), 7.5% met BLIPS criteria, and 20% for the trait and state risk group according to the CAARMS. Finally, 15% of ARMS patients belonged to more than one CAARMS group.

Table 1 shows sociodemographic and psychosocial characteristics. As can be seen, the ARMS population was composed of young adults (mean age 21 years, range = 14–30), the majority of whom were male and single. Most had a high school diploma and had some active occupation (studying or working). Almost all of them were living with their family of origin (in half of the cases both parents were living together). Only one patient met criteria for current (last month) cannabis abuse or dependence. In addition, the mean age at onset of prodromal symptoms was 17.5 years (SD = 3.5) and the mean of DUI was 106.4 weeks (SD = 192.2).

	ARMS *N* = 40
	n (%)
Age (mean, SD)	21.0 (4.1)
Gender	
Males	27 (67.5)
Females	13 (32.5)
Immigrant	
No	31 (77.5)
Yes	9 (22.5)
Education	
Primary education	3 (7.5)
Secondary education	33 (82.5)
University studies	4 (10.0)
Occupation	
Unemployed/unoccupied	11 (27.5)
Student	18 (45.0)
Sick leave	1 (2.5)
Worker/employee	9 (22.5)
Non-paid work (volunteer or charity)	1 (2.5)
Marital status	
Single	35 (87.5)
Going out with someone	4 (10.0)
Married or analogous	1 (2.5)
Separate/divorced	1 (2.5)
Living situation	
Alone	1 (2.5)
With the family of origin	39 (97.5)
Family structure	
Parents live together	20 (50.0)
Separated or divorced parents	13 (32.5)
Single or widowed parents	4 (10.0)
Patient lives with another relative because parents were deceased or cannot take care of the patient	3 (7.5)
Current substance abuse/dependence (last month)	
Alcohol abuse/dependence	0 (0)
Cannabis abuse/dependence	1 (2.5)
Other substance abuse/dependence	0 (0)

ARMS, At-Risk Mental State; SD, standard deviation.

Table 1. Sociodemographic characteristics of the sample

Table 2 presents descriptive data of measures of sQoL, psychopathology, premorbid functioning, and current social and role functioning.

	ARMS $N = 40$		
	Possible range	Range	Mean (SD)
Quality of life (WHOQoL-BREF)			
Physical health	4–20	4.5–18.7	13.7 (3.0)
Psychological state	4–20	6–18.7	12 (3.6)
Social relationship	4–20	4–17.3	11.8 (3.7)
Environment	4–20	7.5–18	13.3 (2.9)
Overall QoL	2–10	2–10	6 (2.1)
Symptoms			
CAARMS			
Positive symptoms	0–24	0–18	9.5 (3.7)
Cognitive change	0–12	1–10	4.4 (1.9)
Emotional disturbance	0–18	0–13	5.4 (2.9)
Negative symptoms	0–18	3–16	8.2 (3.1)
Behavioural change	0–24	3–16	8.8 (3.5)
Motor/physical changes	0–24	0–12	4.8 (3.5)
General psychopathology	0–48	2–26	13.5 (6.0)
CDS			
Depression	0–27	0–17	6.8 (4.8)
Premorbid functioning (PAS)			
Childhood	0–1	0–0.5	0.3 (0.1)
Early adolescence	0–1	0.1–0.9	0.4 (0.2)
Late adolescence ($n = 36$)[a]	0–1	0.2–0.9	0.4 (0.2)
Adulthood ($n = 31$)[b]	0–1	0.3–0.8	0.5 (0.2)
Current functioning			
Social functioning (GF-Social)	0–10	2–8	5.8 (1.3)
Role functioning (GF-Role)	0–10	3–7	5.7 (1.9)

[a] Not applicable for patients younger than 15 years old.
[b] Not applicable for patients younger than 18 years old.
ARMS, At-Risk Mental State; CAARMS, Comprehensive Assessment of At-Risk Mental States; CDS, Calgary Depression Scale; GF-Role, Global Functioning-Role Scale; GF-Social, Global Functioning-Social Scale; PAS, Premorbid Adjustment Scale; WHOQoL-BREF, World Health Organization Quality of Life-BREF version.

Table 2. Descriptive data

Associations of sQoL with age at onset of prodromal symptoms, DUI, symptom severity and functional impairment

Pearson's correlations were carried out for all sQoL domains with age at onset of prodromal symptoms, DUI, symptom severity, premorbid functioning and current functioning scores. The effect size is also presented and was interpreted following Cohen's guidelines[33] (medium effect: magnitude ≥0.30, large effect: magnitude ≥0.50).

As shown in Table 3, neither age at onset of prodromal symptoms nor DUI was associated with sQoL. A large number of significant and negative correlations between symptom dimensions and sQoL domains were found. Behavioural change, depression and negative symptoms held the strongest relationship with all sQoL domains. Both positive symptoms and general psychopathology were associated with the perception of poor overall sQoL.

	sQoL (WHOQoL-BREF)				
	Physical health	Psychological health	Social relationships	Environment	Overall sQoL
Background variables					
Age at onset of prodromal symptoms	−0.25	−0.05	−0.09	−0.04	−0.15
DUI	−0.08	−0.24	−0.13	−0.24	−0.23
Symptoms					
CAARMS					
Positive symptoms	−0.03	−0.19	−0.11	−0.15	**−0.32***
Cognitive change	−0.15	−0.17	0.11	−0.12	−0.09
Emotional disturbance	−0.08	−0.07	−0.05	0.01	−0.08
Negative symptoms	**−0.41****	***−0.53*****	**−0.40****	**−0.39***	***−0.53*****
Behavioural change	**−0.44****	**−0.44****	**−0.45****	**−0.44****	**−0.45****
Motor/physical changes	−0.15	−0.09	−0.06	−0.21	**−0.30**
General psychopathology	−0.15	−0.23	−0.25	−0.25	−0.42**
CDS					
Depression	***−0.51*****	**−0.47****	***−0.50*****	**−0.48***	***−0.56*****
Premorbid functioning (PAS)					
Childhood	−0.08	−0.09	−0.06	−0.17	−0.03
Early adolescence	−0.08	−0.10	−0.10	−0.05	−0.06
Late adolescence ($n = 36$)†	**−0.32**	**−0.38***	**−0.40***	−0.28	−0.20
Adulthood ($n = 31$)‡	−0.22	**−0.31**	−0.23	0.25	**−0.31**
Current functioning					
Social functioning (GF-Social)	***0.63*****	**0.46****	***0.60*****	**0.44****	**0.37***
Role functioning (GF-Role)	***0.50*****	***0.52*****	***0.58*****	***0.53*****	**0.46****

*$P < 0.05$; **$P < 0.01$.
†Not applicable for patients younger than 15 years old.
‡Not applicable for patients younger than 18 years old.
Medium effect sizes in bold, large effect sizes in bold and italics.
CAARMS, Comprehensive Assessment of At-Risk Mental States; CDS, Calgary Depression Scale; DUI, duration of untreated illness; GF-Role, Global Functioning-Role Scale; GF-Social, Global Functioning-Social Scale; PAS, Premorbid Adjustment Scale; sQoL, subjective quality of life; WHOQoL-BREF, World Health Organization Quality of Life-BREF version.

Table 3. Correlations between WHOQoL-BREF domains and age at onset of prodromal symptoms, DUI, severity of symptoms, premorbid functioning and current functional impairment in ARMS patients (N = 40)

Premorbid functioning in late adolescence was significantly and negatively correlated with psychological health, and social relationship domains of sQoL with a medium effect size. Current social and role functioning showed a strong positive and significant association with all sQoL domains, with medium-large effect sizes. Of note, all significant correlations of sQoL with symptom severity and functional impairment had medium-large effect sizes despite the relatively small sample size.

Given that sociodemographic variables may impact the association of sQoL with psychopathology and functioning, we examined the relationship of sociodemographic variables with sQoL and then recomputed the correlations presented in Table 3 described above partialling out the effect of those sociodemographic variables that were significantly associated with sQoL. Gender was significantly associated with overall sQoL ($r = -0.42$, $P < 0.01$), such that female gender was related to poorer sQoL. In order to examine the association of occupation status and sQoL, we collapsed the 'active' situations (student and worker/employee) and the remaining 'non-active' situations (unemployed/unoccupied/sick leave/volunteer). It was found that an active status was associated with higher social ($r = 0.39$, $P < 0.05$) and environment ($r = 0.38$, $P < 0.05$) sQoL. Finally, there was no association between educational level, marital status, immigrant status, living situation, family structure or current substance abuse or dependence with sQoL. Partial correlations between sQoL and psychopathology and functioning variables were thus computed controlling for gender and occupation status. When partialling out the effect of gender, most associations remained significant, although some decreased in terms of magnitude and level of statistical significance. Only depression lost the association with almost all sQoL domains when gender was partialled out, except for overall sQoL. The association of sQoL and depression was only significant for males (although please note that there were only 13 females in this sample). When controlling for occupation, most of the associations remained significant even if some became lower in magnitude (though many still were of medium effect) and level of statistical significance.

Discussion

This study focused on the association of sQoL with age at onset of prodromal symptoms, DUI, symptom severity, premorbid functioning and current functional impairment in ARMS patients. Findings indicated that different domains of sQoL were meaningfully associated with several symptom dimensions and functional impairment, suggesting that greater symptom severity and poor functioning are already related with decreased sQoL in the ARMS stage of psychosis prior to the transition into full-blown psychotic disorder.

Both positive symptoms and general psychopathology were associated with poor overall sQoL. The association between positive symptoms and sQoL is consistent with studies conducted with chronic and FEP samples[7, 12, 13] that have suggested that the experience of reality distortion and other positive symptoms can have profound implications for the general subjective well-being related to life circumstances. Thus, positive symptoms, such as unusual thought content and perceptual anomalies, that occur beyond patients' control may interfere with their overall well-being. Moreover, although the association between general psychopathology and sQoL was to be expected, our findings showed that general psychopathology in ARMS patients has a limited impact upon sQoL, unlike findings in schizophrenia patients that show that general psychopathology consistently is the strongest contributor to poor sQoL.[14] However, it is noteworthy that depression showed a strong association with all sQoL domains, which supports the findings of one of the three previous studies on QoL in ARMS patients indicating that depression was the most important variable contributing to sQoL in their prodromal sample.[8] Therefore, it seems relevant for future research on sQoL to consider depression independently from general psychopathology.

Severity of negative symptoms, behavioural change, depression and current functional impairment were consistently associated with sQoL across all domains with medium-large effects, emerging thus as important factors related with poor sQoL in the ARMS stage of psychosis. The association between negative symptoms and depression with sQoL is consistent with several previous findings in schizophrenia and FEP samples (e.g. Eack and Newhill;[14] Malla et al.;[18] Rocca et al.[34]), and points out the capital relevance of affective-motivational symptoms for patients, much more so than that of subclinical positive symptoms. Thus, it seems that feeling apathetic, unmotivated and depressed may have a greater impact on sQoL than attenuated psychotic symptoms for ARMS patients. This finding is in line with the increasing awareness of the importance that affective and motivational dimensions have in the 'non-affective' psychoses.[35] Nevertheless, it is necessary to take into account that previous research has indicated that depression leads to an overestimation of difficulties,[36] which may contribute to the perception of impaired sQoL.

Unlike previous findings indicating that sQoL is influenced by the DUP in FEP samples,[3, 18] and contrary to what it was expected, neither age at onset of prodromal symptoms nor DUI was associated with sQoL in our sample. Although a longer DUI would theoretically involve greater clinical and functional impairment and thus a worsening of sQoL, our findings seem to indicate that the delay of a specific treatment for prodromal symptoms does not directly affect sQoL in the same way as DUP does. It might be that a relevant condition for the impairment of sQoL is the accumulative effect of psychological dysfunction, which would be much higher for FEP samples (as indexed by DUP) than for ARMS samples (as indexed by DUI). However, the lack of previous studies examining the association between sQoL with age at onset of prodromal symptoms and DUI in ARMS subjects limits our ability to draw firm conclusions.

Premorbid functioning in late adolescence was associated with the psychological health and social relationship domains of sQoL, suggesting that poor premorbid functioning beginning in late adolescence (probably coinciding with the age at onset of unspecific and/or prodromal symptoms) can influence the subsequent perception of poor psychological well-being (bodily image and appearance, self-esteem, concentration, etc.), as well as of personal relationships, social support and sexual activity. It may well be that the experience of long-lasting difficulties in adjustment during the late teens undermines the development of the necessary resources (e.g. social skills, a social network) to cope with subsequent psychosocial deficits during the ARMS stage. Although previous studies have not explored this issue in high-risk samples, findings with FEP patients also show a negative association between premorbid adjustment and sQoL.[3, 17]

Findings also highlight the importance of the relationship between current functional impairment and poor sQoL, given that both social and role functioning were strongly associated with all sQoL domains. The association between behavioural change and all sQoL domains converges with this result, as CAARMS behavioural change has a strong overlap in terms of content with functional impairment (social isolation, impaired role function, disorganizing/odd/stigmatizing/dangerous behaviour). Overall, functional impairment emerges as an important correlate of sQoL as early as in the at-risk stage of psychosis. These findings support the model proposed by Cornblatt and colleagues[28, 37] who have emphasized the importance of functional decline in the prodromal period and the need to take into account the

development of early functional deficits to improve prevention strategies and the predictive validity of ARMS criteria.

It is attractive to speculate that many ARMS individuals seek help not only because they suffer a range of psychopathology and/or functional impairment, but also because the syndrome could influence their perception of their satisfaction with life.[38] The finding that subclinical symptoms and functional impairment that characterize the ARMS state are related to decreased sQoL supports Bechdolf et al.'s[22] claim that ARMS patients constitute a clinical population for which further intervention is indicated. However, more research is needed to clarify the specific impact of different factors associated with sQoL in prodromal patients in order to tailor early interventions for the prevention of sQoL impairment over time. Similarly, future studies with larger populations will be better positioned to clarify the impact of sociodemographic and psychosocial factors (e.g. type of family structure) on the association between sQoL and clinical and functional variables. Finally, a limitation of this study is that its cross-sectional design precludes conclusions about the causal relationships between sQoL, symptoms and functional impairment, which can only be disentangled with further prospective studies. The project in which this study is embedded is currently following up these individuals and will hopefully contribute to shed light to this issue.

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